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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/662,849	09/15/2000	Martin Schuessler	1748X/49153	2146

7590 02/08/2005

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EXAMINER	
WACHTEL, ALEXIS A	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/662,849	SCHUESSLER, MARTIN	
	Examiner	Art Unit	
	Alexis Wachtel	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6 and 8-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,8-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Response to Amendment

1. Applicant's amendment and accompanying Remarks filed 11-16-04 have been entered and carefully considered.

The amendment is insufficient to overcome the obviousness rejections of claims 1-16.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4,6,8-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,159,434 to Gonjo et al in view of DE 197 43 673 A1 to Schussler et al and US 5,209,906 to Watkins et al.

Per claim 1:A system for heating or converting at least one medium, said system comprising at least one of an evaporator (Fig. 1, item 2), a reactor (Fig.1, items 4,4a,5,6a,6b) and a heat exchanger (Fig.1, item 7a), having layers arranged in a stack (Col 5, lines 15-22), wherein the stack includes separator devices (46) which divides it into a plurality of function areas' wherein the layers are arranged between a lower end plate and an upper end plate (Gonjo et al, Fig.9).

While Gonjo et al teaches the use of alloy plate layers some of which have a catalyst disposed thereon (Col 6, lines 10-19), Gonjo et al fails to teach that the layers

are formed by pressing of the catalyst material. Schussler et al teaches an apparatus made of pressed catalyst layers used for producing hydrogen from hydrocarbons. A reaction mixture flows under pressure through the catalyst layer while the pressure drops. Since the catalyst coated alloy plate layers used in the reactor portion of Gonjo et al's system and the pressed catalyst layers disclosed by Schussler et al are functionally equivalent, it would have been obvious to one of ordinary skill to have replaced the catalyst coated alloy plate layers with pressed catalyst layers with a reasonable expectation of success.

Gonjo et al in view of Schussler et al fail to teach that insulating plates are provided between the end plates and layers which are respectively adjacent to the end plates. Watkins et al teaches an isothermal fuel reforming reactor having endplates (Fig.5, item 86,87) and insulator plates (Fig.5, item 74,85) disposed adjacently to the end plates and reactor assembly (Fig.5, items 75,76,77,78,79,81,82,83 and 84). The insulator plate effectively functions to isolate the reactor assembly from the outside environment. In view of this teaching it would have been obvious to one of ordinary skill to have improved on the apparatus disclosed by Gonjo et al and Schussler et al by providing an insulation plate adjacent to the end plates and layers. One of ordinary skill would have been motivated by the desire to further insulate the layers from the outer environment.

Per claim 2: Since Gonjo et al and Schussler et al as set forth above teach the use of layers formed from pressed catalyst, at least one medium can inherently be pressed through the layers, with a resulting pressure drop.

Per claim 3: Since Gonjo et al and Schussler et al as set forth above teach the use of layers formed from pressed catalyst, at least one medium can inherently flow over the layers, with a resulting pressure drop.

Per claim 4: Wherein said separator devices comprise insulating plates which divide the stacked layers into thermally mutually insulated function areas (Gonjo et al, item 46).

Per claim 6: Gonjo et al teaches that wherein separator plates are parallel to the layers (46).

With respect to claim 8, the references as set forth above are silent as to the material used to make the endplates. However, aluminum is a light, strong, heat and corrosion resistant material. One of ordinary skill would have recognized the utility of employing endplates made of aluminum motivated by the desire of using durable endplate material with a reasonable expectation of success.

Per claim 9:The system according to claim 5, further comprising devices for clamping the layers between the two end plates (Gonjo et al, Col 13, lines 25-26).

Per claim 10:The system according to claim 9, wherein the devices for clamping are formed by tie rods (Gonjo et al, Col 13, lines 25-26).

Per claim 11: wherein edge areas of the layers are sealed off with respect to the environment. Examiner notes that the edge layers of the layers are inherently sealed to some degree since a plurality of plates stacked additionally function to seal layer edges.

Per claim 12: Function areas that can operate at high temperature are formed in an interior of the stack (Fig.1a, item 7a).

Per claim 13, Gonjo et al in view of Schussler et al fail to teach an insulation layer laterally surrounding the stack. Watkins et al teaches a housing (Fig.5, item 88) surrounding the internal parts of a reforming reactor. The housing effectively protects the interior of the reactor from damage that the outside environment can cause to the reactor internals. In view of this teaching it would have been obvious to one of ordinary skill to have provided a housing around the appartus disclosed by Gonjo et al and Schussler et al motivated by the desire to protect the apparatus internal from damage. Examiner additionally notes that the housing is capable of providing thermal insulation as well to some degree.

Per claim 14, Gonjo et al, Schussler et al and Watkins et al as set forth above fails to teach that the end plates and the devices for clamping in the layers are provided outside a thermally insulated area defined by outer insulating plates and insulation. Watkins et al additionally teaches that tie rods can be situated such that they are exterior to any reactor components. (Fig. 5, item 21). Since the apparatus disclosed by Gonjo et al and Schussler et al uses tie rods to hold the layers togather (Gonjo et al, Col 13, lines 25-26), it would have been obvious to one of ordinary skill to have employed tie rods located outside of the housing since one of ordinary skill would have realized such a modification is just a simple matter of design choice.

Per claim 15: further comprising at least one of: educt ducts which extend through at least a portion of the layers, by way of which educt ducts individual function areas can be selectively acted upon by respective educts; connection ducts which extend through at least a portion of the layers, by way of which connection ducts educts

or products can be transferred from a first connection area into a second function area; product ducts which extend through at least a portion of the layers, by way of which product ducts heated educts and reaction products can be removed from the respective function areas (Gonjo et al, Fig.4).

Per claim 16: The system according to claim 13, further comprising, different educt ducts which selectively communicate with respective function areas for admitting an identical educt to different function areas, and different product ducts for removing the product from the respective function areas (Gonjo et al, Fig.4).

Arguments

4. Applicant argues that Applicant's claim 1 recites a system in which "the layers are arranged between a lower end plate and an upper end plate." In contrast, the end plates in Fig.5 of Watkins are end plates of just the reaction section and not of the modular isothermal reactor. Fig.5 is described as illustrating an exploded side view of the reaction section of a second embodiment of the modular isothermal reactor... (Watkins, Col 4, lines 37-39). Accordingly, Applicant's arguments are found to be wholly unpersuasive since relied on Fig.5 is an illustration of a modular isothermal reactor. Additionally, Applicant argues that while element 74 is an insulating plate, element 84 is a gasket rather than an insulating plate. Judging from the proximity of element 84 (gasket) to element 85 (insulating plate) it would have been abundantly clear that the Examiner was intending to use element 85 as the basis of the rejection. Applicant's arguments are in this case moot.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Wachtel whose telephone number is 571-272-1455. The examiner can normally be reached on 10:30am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Glenn Caldarola, can be reached at (571)-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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